



**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**ORGANIZATIONAL ANALYSIS OF ENERGY MANPOWER
REQUIREMENTS IN THE UNITED STATES NAVY**

by

Nicholas A. Devorak

June 2013

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 2013	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE ORGANIZATIONAL ANALYSIS OF ENERGY MANPOWER REQUIREMENTS IN THE UNITED STATES NAVY			5. FUNDING NUMBERS	
6. AUTHOR(S) Nicholas A. Devorak				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number ____N/A____.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) <p>The Secretary of the Navy (SECNAV) directed NPS to establish energy-focused subspecialty codes (SSC) that will prepare officers to manage all aspects of energy. In response to this SECNAV directive NPS has developed four energy-focused degree plans in the areas of Operations Analysis, Financial Management, Mechanical and Electrical Engineering.</p> <p>An analysis of the current force structure requirements was necessary to assess and implement a new direction. At the present time, the Navy utilizes petroleum management officers as energy managers. Unfortunately, the Navy Officer Billet Classification (NOBC) Codes assigned to these officers do not translate into the identification of the billets being identified with the energy SSCs. Analysis shows a possible solution to this issue is to establish afloat and ashore general Energy NOBCs that could be assigned as either a primary or secondary NOBC Energy billets.</p> <p>Specifically, analysis shows the majority of NOBCs assigned to energy billets are from the Naval Operations (9000-9999) Field. Therefore, this research recommends the establishment of two Energy NOBCs to support future Fleet Energy Management Challenges.</p>				
14. SUBJECT TERMS: Energy, Conservation, SECNAV, Requirements, Manpower, Force Structure, Navy Officer Occupational Classification, NOBC, Educational Skills Requirements, ESR, Subspecialty Code, SSP			15. NUMBER OF PAGES 95	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

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**ORGANIZATIONAL ANALYSIS OF ENERGY MANPOWER REQUIREMENTS IN
THE UNITED STATES NAVY**

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

**NAVAL POSTGRADUATE SCHOOL
June 2013**

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ABSTRACT

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LIST OF ACRONYMS AND ABBREVIATIONS

APC	Academic Profile Code
AQD	Additional Qualification Designation
CHNAVPERS	Chief of Naval Personnel
CIVINS	Civilian Institutions
CNO	Chief of Naval Operations
CO	Commanding Officer
CSR	Core Skills Requirement
DCNO	Deputy Chief of Naval Operations
DIV	Division
DLA	Defense Logistics Agency
DoD	Department of Defense
DON	Department of the Navy
EOD	Explosive Ordnance Disposal
EOM	End of Mission
ESR	Educational Skills Requirements
FISC	Fleet and Industrial Supply Center
KSA	Knowledge, Skills, and Abilities
MBA	Masters of Business Administration
MILPERSMAN	Military Personnel Manual
MPTE	Manpower, Personnel, Training and Education
NAVMAC	Navy Manpower and Analysis Center
NAVPERS	Navy Personnel
NOBC	Navy Officer Billet Classification Codes

NFO	Naval Flight Officer
NOOCS	Navy Officer Occupational Classification System
NPS	Naval Postgraduate School
NTSP	Navy Training System Plan
ODC	Officer Data Card
OPNAVINST	Chief of Naval Operations Instruction
RDT&E	Research Development Test & Evaluation
SA	Situational Awareness
SAL	Strategic Arms Limitation
SECNAV	Secretary of the Navy
SSC	Subspecialty Codes

I. INTRODUCTION

A. AREA OF RESEARCH

This research analyzed the force structure requirements and manning implications for operating and implementing the Navy's Energy Initiatives. The research examined a broad spectrum of energy operations and employment by the United States Navy. The study reviewed officer force structure requirements for managing energy resources and conducting energy programs Navy-wide. Occupational standards required for operating and managing the various energy conservation programs were analyzed. The objective of the research was to provide the Navy with a consolidated framework for understanding energy program manpower requirements and make Navy force structure recommendations.

B. RESEARCH QUESTIONS

The primary questions are as follows:

- What Navy Officer Billet Classification Codes would best meet the requirements of the billets associated with the Defense Energy Programs?
- What are the policies and directives regarding Energy Program development?

C. DISCUSSION

The topics of Energy Resource Management and Security have proven to be a vital and integral part of economic and national security strategies. The United States Navy has been a pioneer in energy related matters through the implementation of policies, programs, and technological advances (Collum, 2010). This is evident in the

implementation of energy safeguards that decrease the overall demand for energy, resulting in a decreased need for importing and transporting fossil fuels.

In August 2011, the Secretary of the Navy (SECNAV) took the stage at the Naval Postgraduate School (NPS) and announced the contributions to the Navy's energy initiatives that would be taking place at NPS (School, 2012). These contributions consisted of the establishment and implementation of new energy related degree programs and lecture series that would develop Officers with the necessary skills required to establish Department of the Navy Energy Independence.

While Department of the Navy energy programs and goals impact climate change and forward the environmental agenda, the focus of these programs are on improving security and warfighter efficiencies. Throughout history the Navy has been a pioneering force in the development and implementation of alternative energy sources. This is evident through the transition of sailing ships to steam, steam to coal, coal to oil, and ultimately, from oil to nuclear (Collum, 2010). By enhancing energy independence and using fewer resources to power vehicles and systems the dependency on foreign nations will be reduced. The fact that the United States military is the single largest consumer of energy and oil in the world leads to an increased challenge of distributing and managing energy resources globally (Koronowski, 2013).

A consolidated list of force structure requirements is necessary to examine how to integrate Energy initiatives into the fleet. Purposed degree and subspecialty code

documents will provide an overview as well as recommendations regarding force structure for the Navy's Energy Programs, specifically for graduates of the Naval Postgraduate School and other Energy Programs.

D. BENEFITS OF THE STUDY

The study of Navy Energy officer manpower requirements is a critical component in the fleet implementation of energy management. A thorough understanding of billet classifications is necessary to ensure implementation in a fleet environment and without the Navy may face difficulties in terms of integrating cultural changes required for a successful energy program.

E. SCOPE

The scope of the study included: (1) an examination of relevant policy messages; (2) an evaluation of Navy Officer Billet Classification Codes (NOBC) for purposed billets; (3) an evaluation of Navy Subspecialty Codes (SSC); and (4) an analysis of U.S. Navy education and schools for operation and implementation.

F. METHODOLOGY

The methodology used in this thesis research consisted of the following steps:

- A literature search for books, magazine articles, Internet search, and Instructional reference information was conducted
- Proposed energy manpower requirements
- Subspecialty Code (SSC) requirements
- Navy Officer Billet Classification (NOBC) Code requirements were reviewed

G. THESIS ORGANIZATION

Chapter I—Introduction: Establishes the primary purpose of the thesis and discusses the importance of energy management. Primary and secondary questions are established.

Chapter II—Operational Employment and Force Structure Considerations of the Naval Energy Conservation Program: Provides a brief history of the Naval Energy Program and discusses the operations and requirements for implementation.

Chapter III—Naval Energy Resource Management and Conservation Program and Force Structure Implications: Establishes a critique and consolidated discussion of the Subspecialty Codes (SSC), as well as the manpower standard requirements for establishing required NOBCs and SSCs.

Chapter IV—Interpretations of Analysis and Development Of Navy Officer Billet Classification Codes: Provides results of analysis and the establishment of Navy Officer Billet Classification Codes (NOBC), as well as properly defines task and duties associated with Energy Management Billets.

Chapter V—Summary, Conclusions and Recommendations: This chapter will provide a summary of findings and recommendations to the Navy on potential improvements to energy program force structure requirements determination.

II. OPERATIONAL EMPLOYMENT AND FORCE STRUCTURE CONSIDERATIONS OF THE NAVAL ENERGY CONSERVATION PROGRAM

A. INTRODUCTION AND OVERVIEW OF ENERGY INITIATIVES IN THE U.S. NAVY

1. Overview

The Navy values energy as a strategic resource and understands how energy security is fundamental to National Security. Through educational and training programs the Department of the Navy is looking to reach energy independence utilizing new alternative fuels and energy efficient technologies (From Office, 2010).

Historically, the Navy has viewed the management of energy as a function of petroleum. The management of fuel supplies has rested on Supply Corps Officers (3100) to coordinate purchasing, accounting, and logistics to the operational force and installation commands globally. The development and use of alternative energy sources has led to the DoD and DON revisiting the way energy resources are viewed and managed. The development of the Secretary of the Navy's Program and Executive Lecture Series is a clear sign of the changing priorities regarding energy management and consumption.

Under the direction of the SECNAV, the Naval Postgraduate School has developed four energy graduate degree programs with the intent of broadening the scope of energy beyond petroleum to encompass all forms of energy and technology development. The four degree programs will address

the areas of Electrical and Mechanical Engineering, Financial Management, and Operations Analysis (School, 2012).

2. Origin of Initiatives

Secretary of the Navy

Since taking office in 2009, Secretary Ray Mabus has espoused energy-oriented education and training venues designed to change how energy is acquired and used Navy-wide. The intent and practice of how the DON derives and uses energy has become an added dimension in almost everything the Navy executes. The SECNAV's five energy goals, a clear set of priorities and a timeline is made available to all Navy members. The five Energy Goals and timeframes are as follows:

- **Increase Alternative Energy Department-wide:** By 2020, 50% of total Department energy consumption will come from alternative sources
- **Increase Alternative Energy Sources Ashore:** By 2020, at least 50% of shore-based energy requirements will be met by alternative sources; 50% of Department installations will be net-zero
- **Reduce Non-tactical Petroleum Use:** By 2015, Department will reduce petroleum use in vehicles by 50%
- **Sail the "Great Green Fleet":** Department will demonstrate a Green Strike Group in local operations by 2012 and sail it by 2016
- **Energy Efficient Acquisition-** Evaluation of energy factors will be mandatory when awarding contracts for systems and buildings (School, 2012)

To facilitate these goals the SECNAV, in conjunction with the Naval Postgraduate School, developed

four energy focused master's degree programs and the SECNAV Executive Energy Series. The degree programs support the vision of an energy dimension in everything the Navy does by expanding the view of energy from strictly petroleum to include Operations Analysis, Financial Management, Electrical, and Mechanical Engineering.

Chief of Navy Operations (CNO)

With CNO direction, Task Force Energy has developed guidance and a CNO Navy Energy Strategy to support the Navy's culture change in relation to energy. The CNO guidance: "Provide a Navy Energy Strategy that treats energy as a strategic resource," (School, 2012, p. 4) is further expanded upon through the use of an Ends, Ways, Means model that details the Vision, Strategic Imperatives, Targets and Enablers. As Admiral Gary Roughhead, Chief of Operations describes:

Competition for energy resources must figure into our thinking, not just in our strategic view outside of the Navy but how we as a Navy develop alternative forms of energy. (Collom, 2010, p 3)

The CNO has defined energy security as "having assured access to reliable and sustainable supplies of energy and the ability to protect and deliver sufficient energy to meet operational needs" (Collum, 2010, p. 4). While successful implementation of the Navy's Energy Strategy and realization of the Energy Vision is dependent on many factors, the CNO as well as the Navy are committed to an energy transformation that will provide strategic and operational advantages.

3. Alternative Energy Sources

Alternative Energy is defined as energy derived from sources that do not consume natural resources or harm the environment (Websters Dictionary, 1913). The development of alternative energies and technologies to increase efficiencies integrated into all of the SECNAV and CNO energy goals is vital to familiarize leadership and civilian employees of the issues and means to avoid the effects of shortages in energy resources.

Many types of alternative energy sources have been developed throughout history and used by the Navy. The Navy has established and implemented several of these sources such as wind, photovoltaic, nuclear, biomass, geothermal, and intelligent design of facilities in an attempt to move away from traditional energy sources. Geographical locations of Navy installations and the environmental conditions associated with these locations are determining factors of what type and to what extent alternative energy sources can effectively and efficiently meet the energy demands of operational and day-to-day functions of base facilities.



Figure 1. A 1.5 Megawatt wind turbine set up at the Marine Corps Logistics Base in Barstow, CA.
(From Flores, 2010)

In an effort to capture the energy of the winds in several military installations have installed windmills to offset the power demands placed on the commercial electrical grid.



Figure 2. Solar photovoltaic powersystems (SPVPS) installed at Naval Base San Diego (NBSD) are utilized to generate alternative energy to supply power to the base's buildings. (From Office, 2010)

Photovoltaic systems have been installed on military installations to meet the energy demands of shore facilities. With the placement of these systems on the roofs of base facilities and covering parking lots, military installations are not required to allocate vital acreage resources.



Figure 3. Sailors spell out "E=MC2" on the flight deck of the aircraft carrier USS Enterprise (CVN 65) to commemorate the 50th anniversary of the ship's commissioning. (From Navy, 2011)

The Navy has and continues to develop nuclear energy to power a multitude of ship and submarine classes as an alternative to coal or petroleum based fuels. In March 2010, the U.S. Navy was operating 82-nuclear powered ships (11 aircraft carriers, 18 SSBN\SSGN, and 71 SSN) (World Nuclear Association, 2013).



Figure 4. Guided-missile Cruiser USS Princeton (CG 59) operating during Rim of the Pacific (RIMPAC) 2012 using a 50-50 blend of advanced biofuel and traditional petroleum-based fuel. (From Navy, 2011)

The 2012 Rim of the Pacific multinational exercise acted as the Navy's first show of operational progress in meeting the SECNAV goal of "Sailing the Great Green Fleet" by 2016.



Figure 5. The Navy 1 geothermal plant near COSO Hot Springs, CA. (From Energy, 2013)

Since 1987, the Navy has been producing clean power through the use of geothermal power plants at the Naval Air Weapons Station China Lake.



Figure 6. Building 850 at Naval Base Ventura County (NBVC) incorporated energy efficient design elements, including skylights, open ceilings, exposed ventilation system ductwork, which maximizes the use of natural ventilation, and 100% day lighting. (From Office, 2010)

Through implementation of energy efficient design feature and techniques the DON is utilizing the natural environment to reduce energy demand in shore facilities.

Figures one through six are examples of the DON's current utilizations of alternative energy sources. The expansion of alternative energy technologies and development of new energy efficient practices will continue to progress toward the SECNAV Energy Goals.

B. THE DEPARTMENT OF THE NAVY PETROLEUM MANAGEMENT

Until recently, the DON has viewed energy management as a function of petroleum management. This was accomplished through the Navy's Joint Petroleum Management Program at the University of Kansas. The program is a 22 month MBA curriculum that requires additional engineering courses which upon graduation grants the service member a 1307 SSC, petroleum management.

Admission into the Petroleum Management Program requires a 323 APC and is managed by the 3100-Supply Corps Officer Community Manager in conjunction with the Civilian Institutions (CIVINS) program at NPS. Graduates acquire an additional service obligation in a field related to the knowledge gained during the program. These Billets usually contain the 1940 Fuel Logistics Planning Officer or 1946 Fuel Depot Officer NOBC and are Fuel Depot Managers at the Fleet and Industrial Supply Center (FISCs), Defense Logistics Agency (DLA), or as a member of a Fleet Staff.

C. SECRETARY OF THE NAVY ENERGY INITIATIVE PROGRAM

1. Overview

The development of the SECNAV Energy Initiative Program was formally put into action in February 2012 with the release of SECNAV Instruction 4101.3. The purpose of the program is, "To assign Department-wide responsibilities for the administration and management of Department of the Navy (DON) energy programs" (Navy, SECNAV INSTRUCTION 4101.3, 2012). The SECNAV's Initiative comprises two major activities, graduate education and professional development, both of which are being executed at the Naval Postgraduate School. The addition of these programs makes NPS the first military educational institution to offer degree programs focused on energy.

2. Graduate Education

The Master's Degree programs have been established by modifying the curriculum of four currently offered degree programs to include energy focused courses. The additional courses are designed to be direct replacements of courses in the original curriculum. This allows students to complete the energy focused degree option in the same amount of time as students in the original curriculum with no additional course work. The four curriculums that have been adjusted are in Financial Management, Operations Analysis, Mechanical, and Electrical Engineering fields of study.

In addition to adjusting the course workload, the energy focused degree programs have additional Educational Skills Requirements (ESR) in order to obtain the energy

focused subspecialty code (SSC). The development of the ESR and SSC are accomplished through the submission and approval of a Naval Officer Occupational Classification System (NOOCS) package that is submitted to the Navy Manpower and Analysis Center (NAVMAC). The NOOCS package includes a detailed account of the curriculum, qualifications, and proposed existing billets for each field of study. The proposed billets for each curriculum and SSCs can be found in Appendix A through D.

3. Professional Development

Professional Development is accomplished through the implementation of the SECNAV Executive Energy Series, a two week course that is conducted twice a year focusing on developing the knowledge base and policy recommendations of Flag Officers and Senior Executive Service (SES) civilian leaders. The course is an in-resident program conducted at the Naval Postgraduate School in Monterey, California with a targeted enrollment of 20 students per class. The purpose of the Series is "To accelerate the adoption of DoN Energy goals much sooner by raising the level of energy literacy and targeting key influencers to catalyze new policies, programs and practices across the DoN" (School, 2012, p. 11).

4. Naval Postgraduate School Degree Programs

Each of the four degree programs has specific requirements for enrollment into the curriculum. These requirements are in addition to the general admission standards required for acceptance to the Naval Postgraduate School. The additional requirements include officer

designators, Academic Profile Codes (APC), and billet quotas.

a. Financial Management with Energy Focus

The Financial Management with Energy Focus Degree is within the Masters of Business Administration (MBA). Admission to the 838 curriculum requires an APC of 345 and is an 18 month program that covers the basic Financial Management ESRs: Management Fundamentals, Strategic Vision and Defense Budgeting, Funds Management, Accountability, Control, and Auditing, Acquisition and Program Management, Economy, Efficiency, and Effectiveness, Cost Management and Analysis, Strategic Resource Management, Innovation and Creativity, and Strategy and Policy. In addition to obtaining the knowledge prescribed in the basic ESR's an Energy Focused student will gain literacy and understanding in the Energy Emphasis ESR which reads:

<p>Energy Emphasis- The graduate will understand the fundamental concepts and be familiar with the basic functional areas of energy within the Department of the Navy (DON) and the Department of Defense (DoD). The graduate will be able to employ costing for energy efficiency technologies and protocols; understand and compare energy generation systems and their cost/benefits; interpret risk and reward with regard to energy security and energy management; summarize energy consumption and logistics during warfare operations; demonstrate understanding of energy acquisition policy, strategy, and budgeting; and be knowledgeable of energy sources including alternatives to petroleum and their cost/benefits. (Operations, NAVPERS 15839I, 2010)</p>

Figure 7. Energy Emphasis ESR for Financial Management Curriculum

Completion of the 838 curriculum will grant the graduate the 3113 SSC in comparison to the 3110 SSC of the basic Financial Management Curriculum. Recommended Officer Designators that are authorized to hold this subspecialty

are: 111X- An Unrestricted Line Officer who is qualified in Surface Warfare, 112X- An Unrestricted Line Officer who is qualified in Submarine Warfare, 113X- An Unrestricted Line Officer who is qualified in Special Warfare, 114X- An Unrestricted Line Officer who is a Special Operations officer by virtue of training in the EOD, DIV/SAL, and EOM functional areas, 13XX- An unrestricted Line Officer who is a member of the aeronautical community and whose rating as a pilot or NFO has been terminated, 151X- Aerospace Engineering Duty Officer (Aerospace Engineering), 152X- Aerospace Engineering Duty Officer (Aviation Maintenance), and 31XX- Supply Corps Officer (Operations, NAVPERS 15839I, 2010).

b. Mechanical Engineering with Energy Specialization

Students enrolled in the Mechanical Engineering with Energy Specialization Program will be required to have an APC of 323 and will enter into the 570 Curriculum. This 24 month course has start dates in January and June and will grant the 5603 SSC. Officers will understand the fundamental concepts and be familiar with the basic functional areas of: Thermodynamics and Heat Transfer, Fluid Mechanics, Dynamics, Control, Navigation, and Autonomous Systems, Structural Mechanics and Vibration, Material and Fabrication, Computers, Mathematics, Design/Synthesis, Electrical Engineering, Naval Architecture, Joint and Maritime Strategic Planning, and a Specialization in the field of Energy.

Recommended Officer Designators authorized to hold the 5603 SSC are: 1110- An Unrestricted Line Officer

who is qualified in Surface Warfare, 1120- An Unrestricted Line Officer who is qualified in Submarine Warfare, 1300- An unrestricted Line Officer who is a member of the aeronautical community and whose rating as a pilot or NFO has been terminated, 1440- Engineering Duty Officer who is qualified as a Ship Engineering specialist IAW MILPERSMAN 1210-190, 1510- Aerospace Engineering Duty Officer (Aerospace Engineering), and 1520- Aerospace Engineering Duty Officer (Aviation Maintenance). (Operations, NAVPERS 15839I, 2010)

c. Electrical Engineering with Energy Focus

Students enrolled in the Electrical Engineering with Energy Focus, 593 curriculum, will be required to have a 323 APC. The 593 curriculum is an in-resident 24 month program with start dates in January, March, June, and September. Officers must understand the fundamental concepts and be familiar with the basic functional areas of Electrical Engineering including: Mathematics, Engineering Science and Design, Cyber Networks and Physical Infrastructures, Electronic and Electrical Engineering, System Engineering, and Conducting and Reporting Independent Investigation to receive the 5311 SSC.

Recommended Officer Designators authorized to hold the 5311 SSC are: 1110- An Unrestricted Line Officer who is qualified in Surface Warfare, 1300- An unrestricted Line Officer who is a member of the aeronautical community and whose rating as a pilot or NFO has been terminated, 1440- Engineering Duty Officer who is qualified as a Ship Engineering specialist IAW MILPERSMAN 1210-190, and 1510- Aerospace Engineering Duty Officer (Aerospace Engineering) (Operations, NAVPERS 15839I, 2010).

d. Operations Analysis with Energy Focus

Acceptance into the Operations Analysis with Energy Focus Degree program is dependent on meeting the 325 APC and billet quotas. The 358 curriculum is an in resident 21 month course that when successfully completed grants the student the 3213 SSC. Officers will be required to possess the mathematical and computer programming skills required to support graduate study in operations research and have the ability to use computers as a tool to aid in analysis. In addition to acquiring the fundamental knowledge and functional expertise in the following fields of Probability, Statistics, and Data Analysis, Optimization, Stochastic Modeling, Simulation, Analysis of Military Operations, Systems Analysis, and Practice the energy Officers will be required to accomplish a set of Energy ESRs. Descriptions of the Energy ESRs are identified in Figure 8.

- A. The graduate will have the ability to apply Energy Principles as well as knowledge from Operations Analysis to the development and implementation of cost-effective energy technology development and acquisition programs throughout DON and DoD.
- B. The graduate will be able to analyze the strengths and weaknesses as well as cost and logistics implications of new energy technical proposals and suggest alternatives which recognize the potential impact on DoD/DON programs and objectives.
- C. The graduate will understand and be able to apply a range of Operations Analysis techniques (e.g., risk assessment and impact analysis) to RDT&E programs for platforms, systems and equipment that produce or consume energy.
- D. The graduate will have the ability to use and understand Energy systems in operations and logistics problem solving and cost analysis efforts specifically as they relate to existing and proposed DON/DoD Energy programs.
- E. The Officer will be capable of understanding and evaluating the utility of Energy systems, technology, and programs currently employed by DON/DoD. (Operations, NAVPERS 15839I, 2010)

Figure 8. Energy ESRs Associated with the Operations Analysis Energy Curriculum

Recommended Officer Designators authorized to hold the 3213 SSC are: 1110- An Unrestricted Line Officer who is qualified in Surface Warfare, 1120- An Unrestricted Line Officer who is qualified in Submarine Warfare, 1130- An Unrestricted Line Officer who is qualified in Special Warfare, 1140- An Unrestricted Line Officer who is a Special Operations officer by virtue of training in the EOD, DIV/SAL, and EOM functional areas, 1300- An unrestricted Line Officer who is a member of the aeronautical community and whose rating as a pilot or NFO has been terminated, 1510- Aerospace Engineering Duty Officer (Aerospace Engineering), 1520- Aerospace

Engineering Duty Officer (Aviation Maintenance), and 3100-Supply Corps Officer (Operations, NAVPERS 15839I, 2010).

D. STRATEGIC INTENTIONS

While all energy initiatives have environmental impacts the ultimate goal of the Navy's Energy Initiatives is not to focus on the environmental agenda. Rather the DON is dedicated to increasing war fighting capabilities and the safety of deployed forces. According to Captain James Goudreau, director of the Navy's Energy coordination office, "We have to change the culture, we have to reach the point where everyone from the deck plate sailor all the way to the Secretary of the Navy recognizes that every action they take has the opportunity to either increase our war-fighting capability or increase our vulnerability, depending upon each individual energy decision" (Snider, 2011).

Strategic considerations play a vital role in the development of energy goals and technologies. These considerations work to reduce operational risk associated with transportation and acquisition of fuel to deployed forces while saving time, money, and lives. Additionally, the development of safeguards for our energy infrastructure provides the Navy with protection from a volatile energy supply.

E. NAVY OFFICER OCCUPATIONAL CLASSIFICATION SYSTEM (NOOCS)

1. General Description

The Navy Officer Occupational Classification System (NOOCS) is used to identify skills, education, training,

experience and capabilities related to both officer personnel and manpower requirements (Operations, NAVPERS 15839I, 2010). The manual is published in two separate volumes that address the code structure of each of the four subsystems of the NOOCS and additional descriptions of the Officer Data Card (ODC). While packages are submitted to NAVMAC, policy guidance and system control is provided by the DCNO MTPE and CHNAVPERs. The NOOCS Board, per OPNAVINST 1210.2 series, serves as the central point for changes to the Navy Officer Occupational Classification System and should be submitted to Commanding Officer (CO) Navy Manpower Analysis Center.

2. Subsystems

The NOOCS manual, NAVPERS 15839I Volume I is divided into 4 subsystems including Billet and Officer Designator Codes, Subspecialty Codes (SSC), Navy Officer Billet Classification (NOBC) Codes, and Additional Qualification Designation (AQD) Codes. This subsystem structure acts as the primary administrative means of classifying, identifying and documenting manpower resources and requirements.

Part A, Billet and Officer designator codes, establishes general categories for officer designation codes and are used to identify the primary naval specialty qualifications requirements of each billet. These four-digit codes are entered into the Manpower Authorizations (OPNAV Form 1000/2) to indicate the general category of officers required for billets.

Part B, Subspecialty Codes, is used to identify subspecialty requirements and personnel that hold these

skills. The use of Subspecialty Codes allows the Navy to generate advanced education requirements and assign officers with specialties gained through developed educational programs to specific billets. Subspecialties are professional skills and knowledge that is secondary to the Officer Designator and are applied to Unrestricted Line Officers, Restricted Line Officers, and Staff Corps Officers. Eligible Officers gain subspecialty codes through graduate education or higher degree programs by meeting the Education Skill Requirements (ESRs) and Core Skill Requirements (CSRs) from an institution of higher learning accredited by an agency recognized by the Department of Education, programed funding, and NOOCS approval (Operations, NAVPERS 15839I, 2010).

Part C, Navy Officer Billet Classification (NOBC) Codes, is used to identify officer billet requirements and officer occupational experience acquired through billet experience or through a combination of education and experience (Operations, NAVPERS 15839I, 2010). Every billet is assigned a NOBC to provide a general description of duties and responsibilities, similar billets are grouped under the same NOBC, but this does not necessarily mean that the billets of the group are identical. An officer with a NOBC in their record does not definitively have the knowledge of every duty associated with the NOBC, but has held a billet that is generally described by the NOBC.

In Part D, Additional Qualification Designation (AQD) Codes, billet and officer designators are enhanced by the identification of specific qualifications required by a billet or an unique qualification awarded to an incumbent through service in the coded billet. For the purpose of

this research AQD's are not related to the information being analyzed.

F. SUMMARY

The DON's dedication to the development and implementation of Energy Initiatives is evident in the publishing of the SECNAV Energy Initiative Program under the guidance of the SECNAV and CNO. The development of graduate and professional education programs that support the vision and mission of naval leadership is an indication of the culture change required to move the focus of energy management away from the single-scope of petroleum to a broad vision of all things energy related. Provided examples of alternative energy sources being utilized by the DON serve as a brief history of the past and ongoing energy initiatives.

The process of developing programs to grant officers the required skills to provide both FIT and FILL of the developed energy billets was introduced through the Navy Officer Occupational Classification System. The NOOCS process identified the Subspecialty Codes and Officer Designators granted to graduates of the Naval Postgraduate School that participate in the designate energy degree plans and complete the required Educational Skill Requirements.

The presentation of the strategic implications of Energy Security, increased war-fighting capabilities, safety of deployed forces, and safeguards of critical energy infrastructures reinforced that the Navy's agenda is not the environmental agenda. While the two agenda are not completely instep, they do accomplish many of the same goals.

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III. NAVAL ENERGY CONSERVATION PROGRAM OFFICERS AND FORCE STRUCTURE IMPLICATIONS

A. MOVING FORWARD

The Secretary of the Navy has developed a department-wide Energy Program for achieving security and independence while complying with legislative mandates and executive orders. The implementation of this program will be accomplished through educational and professional development accompanied by the placement of Energy educated officers into billets that directly influence energy management. The DON through placement of Energy qualified officers will create a culture whereby all personnel are stewards committed to sustainable energy management practices, and who value the efficient use of clean and secure energy (From Office, 2010).

The development of energy-focused degree programs has led to the proposed creation of a unique SSC for each Energy Curricula. Officers that earn these SSC will have the opportunity to fill energy related billets that are also included in the NOOCS package for the development of the SSCs. As previously discussed every billet is assigned a Navy Officer Billet Classification (NOBC) code, while this stands true for the proposed energy billets, do the current NOBCs accurately depict the role of the billet in the Energy Vision and Mission.

In an effort to advance the SECNAV and CNO Energy Programs and move forward with the culture changes required for the successful implementation of Energy Initiatives, research will compare billeted NOBCs with the newly

assigned SSCs to ESRs and requirements of the SECNAVs Energy Initiatives.

B. METHODOLOGY

Through detailed analysis of the proposed Energy Program NOOCS packages, research will examine the NOBCs, areas of duties, and ESRs assigned to billets. The analysis of the Educational Skills Requirements assigned to the proposed Subspecialty Codes will be accomplished through comparing additional ESRs required to meet the energy requirements of existing degree programs. The SSCs and ESRs for each degree program are included in the request for establishing the energy-focused SSCs.

The determination of NOBCs that are energy related is accomplished through an analysis of Part C of the Manual of Navy Officer Manpower and Personnel Classifications Volume I, NAVPERS 15839I. The list of current NOBCs and associated definitions of duties will be examined for duties relating to the goals of the SECNAV Energy Program. The NOBCs determined to accomplish the duties of energy management will be compared to the NOBCs, both primary and related, of the proposed billets requiring one of the four Energy Subspecialty Codes.

In addition to the NOBCs assigned to the billets, the classification fields associated to NOBCs will be examined to determine the relationship of the fields to energy duties. An analysis of the general duties of each classification field will be compared an established list of duties that will cover the knowledge acquired through the completion of the Energy Educational Skills Requirements.

C. ENERGY EDUCATION SKILLS REQUIREMENTS

Through the development of the Energy Degree Programs at the Naval Postgraduate School, Educational Skill Requirements (ESRs) were developed and added to existing degree programs to give the participating officers the knowledge required to accomplish Energy Initiatives. The ESR's ensure that the officer has been exposed to the principles of operational energy, the acquisition of energy, logistical strengths and weaknesses, risk assessments, and costing analysis of energy generation and management. The energy ESRs related to each degree plan are detailed in Chapter 2 Section D of this report.

The additional ESR's act as a guide for future curriculum development and implementation at the Naval Postgraduate School and Civilian Institutions (CIVINS) that have agreements with the DON for graduate educational opportunities for military service members. Currently the sole Energy Program being conducted at a CIVINS is the previously established Joint Petroleum Management Program. The grade of Officer and the number of each grade proposed to fill billets assigned to require completion of one of the Energy Related Degree Programs are shown in Table 1.

Officer Grade	Number of Billets
Captain	7
Commander	8
Lieutenant Commander	14

Table 1. Officer Grades associated with Energy Management Billets

D. NOBCS ASSIGNED TO ENERGY BILLETS

There are 29 primary NOBCs among the currently proposed billets, and require one of the four Energy SSCs. With 120 possible NOBCs dispersed throughout 29 energy billet only two billets have a related NOBC assigned that discusses energy and zero of the primary NOBCs. Table 2 list the organizations with billets assigned one of the four Energy SSC and the number of billets at each organization.

Organization	Quantity	Organization	Quantity
OPNAV	13	COM U.S. FLEET FORCES COMMAND	1
PEO SHIPS WASH	3	PEO C4I SD	1
NSSC OP SPFDWAS	3	OFF SECREATRY OF DEFENSE	1
COMNAVSPECWARCOM	2	U.S. PACIFIC COMMAND	1
COMNAVAIRPAC	1	PEO LCS	1
COMSC WASHINGTON DC WCF	1	NAVSURFWARCENDIV D VA NWCF	1

Table 2. Organizations and Quantity of Billets Assigned to Each Organization

The billets currently being for Energy SSCs are billets that have already been established and are simply being assigned the new SSCs. With the primary NOBCs of these billets being spread across seven of the ten classification fields there is a wide variety of duties other than energy related functions covered by the billet descriptions. The disbursement of billets and NOBCs across the seven classification fields are shown in Table 3.

Classification Field	Qty of NOBCs	Qty of Billets
Supply and Fiscal (1000-1999)	4	4
Sciences and Services (2000-2999)	3	4
Personnel (3000-3999)	1	1
Weapons and Engineering (6000-6999)	1	1
Naval Engineering (7000-7999)	2	3
Aviation (8000-8999)	1	1
Naval Operations (9000-9999)	13	15

Table 3. Naval Officer Billet Classification Fields containing Energy Management Billets

E. NOBCS WITH ENERGY IMPLICATIONS

Currently Part C, Navy Officer Billet Classification (NOBC), contains three NOBCs that by the provided definition work with energy, excluding nuclear. Two of these NOBCs, 1940 Fuel Logistics Planning Officer [FUEL LOG PLN] and 1946 Fuel Depot Officer [FUEL DEPOT], are directly related to the Petroleum Management Program previously discussed and the third is the 9442 Facilities Manager [FAC MGR] NOBC that includes the duty of supervising conservation of utilities and energy (Operations, NAVPERS 15839I, 2010).

<p>1940 FUEL LOGISTICS PLANNING OFFICER [FUEL LOG PLN] [Job Code: 001063]</p> <p>Plans and directs fuel logistics operations in support of strategic and operational plans. Establishes planning guidelines and objectives. Coordinates and directs determination of requirements to support logistic objectives. Evaluates logistics feasibility of strategic and operational plans, directing execution of logistics plans. Directs programs to improve logistics capabilities. Directs or participates in development of all military logistics plans. Participates in planning and controlling allocation of fuels for civilian and military use.</p> <p>Related Codes: NOBC - 1946; DoD Group - 8A Logistics, General</p>
<p>1946 FUEL DEPOT OFFICER [FUEL DEPOT] [Job Code: 001065]</p> <p>Plans, supervises and coordinates action and functions concerned with receipt, storage, issue and distribution of fuels to meet operational needs. Directs, coordinates and supervises administration and maintenance of depot facility. Directs and conducts tests and inspections, supervising maintenance of prescribed quality control programs.</p> <p>Related Codes: NOBC - 1940; DoD Group - 8B Supply</p>
<p>9442 FACILITIES MANAGER [FAC MGR] [Job Code: 002284]</p> <p>Manages and supervises the general maintenance, safety, and security of property at Naval Shore Activity. Inspects buildings, grounds, equipment and transportation vehicles. Supervises work force or special details in cleaning, painting and facilities maintenance. Ensures conformance to cleanliness, appearance and operational standards through inspections. Controls allocation and assignment of space, equipment and quarters. Maintains security and safety of area. Assigns and supervises security personnel. Supervises the conservation of utilities and energy. Controls operation of transportation vehicles and provides transportation services.</p> <p>Related Codes: NOBC - 4250, 4260, 9242; DoD Group - 4A Construction and Utilities</p>

Figure 9. NOBCs and Definitions that currently address Energy. (Operations, NAVPERS 15839I, 2010)

Though comparison of the current energy related NOBCs to the NOBCs assigned to the billets requiring the Energy SSCs it is realized that none of the proposed billets are identified by any of the three current energy related NOBCs. The 1940 and 1946 NOBCs are restricted to Officers identified by the 3100, Supply Corps, Officer Designator.

As shown in Table 4, of the 29 billets requiring one of the Energy SSCs only six utilize Officers with the 3100 Designator.

Designator	Quantity	Designator	Quantity
Any "O"		RL	
1000	2	1440	6
URL		STAFF	
1050	3	3100	6
1110	7		
1300	3		
1310	1		
1320	1		

Table 4. Officer and Billet Designators and Quantity of Energy Billets

F. ESTABLISHING\REVISING NAVAL OFFICER BILLET CLASSIFICATION CODES

Through analysis of Part C, NAVPERS 15839I Volume I, the guidelines for justification to establish and/or retain a NOBC, as well as the information required to establish and/or revise NOBCs are listed in detail. The justifications to establish and/or retain NOBCs are as follows:

(A) It describes the qualitative requirements of existing or proposed billets in Manpower Authorizations and Officer Distribution Control Reports,

(B) It applies in planning, personnel control, career management, education and training, or manpower information functions,

(C) It applies Navy-wide and does not reflect purely local conditions or organization unless it is necessary to meet criteria stated in B,

(D) It does not duplicate an existing code,

(E) It identifies billets, both peacetime and mobilization, and officer experience, both active and inactive,

(F) It identifies a minimum of 15 billets,

(G) Definitions should be concise and preferably limited to fifty words. The definitions should be broad enough to identify all billets with similar requirements, yet narrow enough to isolate from existing codes. (Operations, NAVPERS 15839I, 2010)

To ensure the relevance of the NOBCs assigned to billets, commands and officers are encouraged to review and evaluate these classifications. If the requirements of a billet are not properly covered by an existing NOBC, or a NOBC with some revision, activities can recommend the establishment of a new NOBC. All recommendations for establishment should include the following:

(A) Recommended code number, long and short title,

(B) Recommended Definition,

(C) Number and location of billets by activity type that the NOBC will identify,

(D) Designators and grades applicable to the proposed code,

(E) List of special training required for the incumbent officer,

(F) Information on how the requirements/qualifications are currently identified,

(G) Justification stating why the existing billet descriptor are insufficient without the proposed NOBC, and other historical or amplifying information necessary for prudent consideration at each level of review,

(H) Point Of Contact.

Currently, all billets proposed to require one of the Energy SSCs are identified by existing NOBCs. While the currently assigned NOBCs describe the general duties of the billets, none of these NOBCs describe the duties described by the Energy ESRs.

G. SUMMARY

The development of the SECNAV Energy Initiative Program has led to the establishment of Energy Degree programs conducted at the Naval Postgraduate School in addition to professional development. The degree programs are modified versions of existing degree programs that contain the additional Educational Skills Requirements to incorporate the emphasis on energy.

Naval Officer Occupational Classification packages have been submitted in an attempt to establish four energy centric subspecialty codes (SSC) that will be gained through the completion of the Energy Degree Programs.

Currently the Navy uses three NOBCs to identify billets conducting energy operations. It is important to note that while these NOBCs do exist they do not explicitly identify the billets requiring the energy SSCs.

The analysis of Part C of the NAVPERS 15839I the requirements for the establishment of a new NOBC along with the requirements for justification of a NOBC are established. The definitions of the NOBCs are derived from the Core Skills Requirements and the Educational Skills Requirements of the educational programs associated with the billets.

IV. INTERPRETATIONS OF ANALYSIS AND DEVELOPMENT OF NAVY OFFICER BILLET CLASSIFICATION CODES

A. RESULTS OF ANALYSIS

As a result of the analysis performed throughout Chapter III, it has become evident that the 27 current NOBCs assigned to Energy-focused billets do not completely define the task Officers assigned one of the four SSC are required to accomplish. A complete list of the currently assigned NOBCs can be found in Appendix I. Prior to 2013, Energy Management was mainly accomplished through the Petroleum Management Program manned by Supply Corps Officers.

Force structure for the Petroleum Management Program is met by a yearly quota of five officers attending the University of Kansas to obtain the 1307 [Petroleum Management] SSC. Through implementation of the SECNAV Energy Initiative Programs in 2013, the DON has created four new SSC and assigned the new SSCs to 29 existing billets. By assigning existing billets with one of the Energy SSCs the Total Force End-strength is not affected. The combination of the existing program quotas and the 12 new quotas associated with the SECNAV Energy Initiative Program, the DON will develop 17 officers a year with Energy Manager Competencies to fill billets requiring Energy specific SSCs.

A qualitative analysis shows that the DON would benefit from the creation of two NOBCs to address the duties required for Energy Management of either ashore or afloat operations. The creation of an ashore and an afloat

NOBC duties and task unique to the missions and operations of each will better prepare the DON to assign the Energy designated officers to the Energy billets. Utilizing the Energy ESRs of the Energy Degree Programs, currently assigned NOBCs, and Part C of the NOOCS Manual to develop and define the proposed new NOBCs. The purposed duties and tasks of Energy Management qualified officers both ashore and afloat are shown in Figures 10 and 11.

B. DEVELOPMENT OF ENERGY NAVY OFFICER BILLET CLASSIFICATION CODES

Through analysis of the Energy related ESRs established and added to existing graduate degree programs at the Naval Postgraduate School coupled with definitions of currently utilized NOBCs identifying Energy related billets this research was able to establish a list of duties and tasks to be performed by officers occupying the proposed billets. Utilizing the duties and tasks identifying the billets requiring on of the energy SSCs the establishment of two Energy NOBCs, one afloat and one ashore, was made possible.

90XX ENERGY ANALYST, AFLOAT [ENR ANAL AFLOAT]
Directs or assists in the analysis and direction of activities concerned with logistical support for all phases of general mission such as air, surface, undersea warfare. Employ cost analysis for operations and logistics of technologies and protocols. Preform risk assessment and impact analysis of energy systems, utilized and proposed.

Figure 10. Developed Afloat Energy Analysis NOBC

The (90XX) Energy Analyst, Afloat NOBC would focus on the Officers assigned to major staffs focusing their efforts on fleet readiness and operational mission completion.

99XX ENERGY ANALYST [ENR ANAL]
Directs or assists in the analysis and direction of activities concerned with the acquisition, development, and implementation of cost-effective energy technologies and programs. Preform risk assessment and impact analysis of energy systems, utilized and proposed.

Figure 11. Developed Energy Analyst NOBC

The (99XX) Energy Analyst NOBC would focus on all shore activities relating to energy. These activities would include base facilities, program development, acquisitions, and policy creation. The benefit of developing separate NOBCs to address the duties and task associated with shore activities and operational activities allows for career development and progression.

C. SUMMARY

A qualitative analysis of the existing NOBCs in Chapter III identified missing knowledge, skills, and abilities (KSA) of billets currently associated with the Energy SSC. Utilizing the NOBC development process identified in Chapter II, the development of two new energy focused NOBCs are presented using SECNAV Initiatives and NPS Energy ESRs. While the Energy NOBCs identify the task associated with Energy Management, the duties associated

with these billets is not limited to Energy Management and Conservation. A combination of the currently utilized NOBCs and the developed Energy qualified NOBCs would recognize both the general and energy duties associated with billets requiring an Energy SSC.

V. SUMMARY, CONCLUSION AND RECCOMENDATION

A. SUMMARY

In August 2011, the Secretary of the Navy announced the development of the SECNAV Energy Initiatives. Part of how these energy initiatives would be accomplished through graduate education and professional development. The intention of the announcement was to send a clear message that the Department of the Navy energy goals would be driven by strategic implications and not the environmental agenda.

An analysis of existing energy management programs throughout the Navy showed that the development of the SECNAV Energy Initiative program indicates a culture shift from viewing energy as a function of petroleum to all aspects of energy generation and acquisition. Initial Force structure requirements to meet the manpower requirements of the Navy's future Energy Managers have been developed and recently submitted through the Navy Officer Occupational Classification System. To meet these requirements existing billets have been modified by adding one of the four energy subspecialty codes to each of the 29 existing billets. These qualitative changes require no new end strength to implement.

This research examined currently utilized NOBCs and the relationship of the NOBCs to the Educational Skills Requirements developed to guide the Energy Degree Programs. This examination showed that while the Navy currently uses three NOBCs to identify energy management billets, none of

the billets proposed for addition of the Energy SSC utilize these NOBCs.

B. CONCLUSIONS AND RECOMMENDATIONS

Primary Research Questions are as follows:

What Navy Officer Billet Classification Codes would best meet the requirements of the billets associated with the Defense Energy Program?

Conclusion: Currently the Navy's Officer Billet Classification Codes that support duties related to Energy, 1940, 1946, and 9442, are not associated with the proposed billets of the SECNAV Energy Program. While the three energy related NOBCs do cover duties associated with energy management and conservation, they do not adequately describe the graduate education attached to billets included in the newly developed Energy Program.

Recommendation: As developed in this research it is recommended that OPNAV N45 submit a request, Appendix J, to establish two new NOBCs, in the 9XXX series as delineated as part of the NOOCS process, to represent the work being accomplished in SECNAVs Energy Initiatives through the completion of Energy Degree Programs.

What are the policies and directives regarding Energy Program development?

Conclusion: The SECNAV Energy Program is established and disseminated through a number of presentations and instructions. These include the Naval Postgraduate School Energy Initiative Overview, SECNAVINST 4101.3, OPNAVINST 1540.56A, and the NAVPERS 15839I Volume I. These documents

are used to identify and establish the requirements of the Energy Program.

Recommendation: Information discovered through this analysis shows that the Department of the Navy would benefit from OPNAV N45 developing and disseminating an Energy Initiative Handbook that would cover all aspects of the Energy Program. The handbook would provide a single source of information and reference required to highlight current Energy Programs and aid in the dissemination of the program.

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APPENDIX A. OPERATIONS ANALYSIS BILLETS

Energy Post Graduate Education
Proposed Billets for Energy Sub Specialty Coding

Defense/Energy Track

FM/E - Financial Management - Energy Track
OA/E - Operations Research and Analysis - Energy Track
EE/E - Electrical/Electronic Engineering - Energy Track
ME/E - Mechanical Engineering - Energy Track
CE/E - Civil Engineering - Energy AQD for Facilities Management with Energy focus

Policy or Engineering (if not E)	Agency	Auth	Job	Job	BSO	Title	SEC	Grade	Grade	Present SSC	Proposed SSC
P (OA/E)	OPNAV	00011	3611862	83105	11	P&P DIR/HEAD, WARFARE PRG INTEG BRANCH	AD	1050	G		3213H
P (OA/E)	OPNAV	00011	0000458	00550	11	STRAT PLAN/INNOVATION ANALYST	AD	1050	X		3213H
P (OA/E)	OPNAV	00011	0000372	52170	11	INTNL AFF/NSA GULF/LEVANT/S.ASIA SEC HD	AD	1050	H		3213H
P (OA/E)	OPNAV	00011	0000959	88310	11	STF PLAN/NSC AMPHIBIOUS PLATFORMS	AD	1110	H		3213H
P (OA/E)	OPNAV	00011	0001225	88310	11	WEP PLAN/PROG/NSOC HD, STRIKE ACFT REQ	AD	1100	G		3213H
P (OA/E)	OPNAV	00011	0000234	80290	11	OPS ANAL/SPECIAL AVIATION PRGMS ANALYST	AD	1100	I		3213H
P (OA/E)	OPNAV	00011	0000251	80256	11	STF PLAN/ASST LOGISTICS ANALYST	AD	1100	I		3213H
P (OA/E)	US PACIFIC COMMAND	00038	0003621	24400	11	OPERATIONS PLANS OFFICER 00008017	AD	1110	I		3213H
P (OA/E)	OFF SECRETARY OF DEFENSE	00022	1975011	10011	29	TRANSFORMATION ANAL 1N000081A09	AD	1000	G		3213H
P (OA/E)	COMNAVSP4WARCOM	00074	1710317	41305	88	EQ PGM SUP/EXPEDITIONARY LOGISTICS	AD	1100	I		3213H

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APPENDIX B. ELECTRICAL ENGINEERING BILLETTS

Energy Post Graduate Education
Proposed Billets for Energy Sub Specialty Coding

Degree/Energy Track

FM/E - Financial Management - Energy Track
OA/E - Operations Research and Analysis - Energy Track
EE/E - Electrical/Electronic Engineering - Energy Track
ME/E - Mechanical Engineering - Energy Track
CE/E - Civil Engineering - Energy AQD for Facilities Management with Energy focus

Policy or Engineering (P or E)	name	alc	bin	bec	BSO	title	mtc	r_desig	r_grade	Present SSC	Proposed SSC
E (EE/E)	OPNAV	00011	0000914	06375	11	P&P DIR/BR HD COMBAT SYSTEMS SWE	AD	1110	G		S311H
E (EE/E)	OPNAV	00011	0000535	05220	11	STP RED GEN/N852E AIR MCM RQMNTS	AD	1310	I		S311H
E (EE/E)	NSSC OP SUPFDWAS	42192	0080025	52005	24	NAVENG MACHDEV/05238	AD	1440	H	S300P	S311P
E (EE/E)	NSSC OP SUPFDWAS	42192	0080154	50335	24	NAVENG SHPDGDN/0502	AD	1440	I	S300P	S311P
E (EE/E)	PEO C&I SD	3579A	3029596	07135	39	DPI SUP/APM - JWARN	AD	1000	I		S311H

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APPENDIX C. MECHANICAL ENGINEERING BILLETS

Energy Post Graduate Education
Proposed Billets for Energy Sub Specialty Coding

Degree/Energy Track

FM/E - Financial Management - Energy Track
OA/E - Operations Research and Analysis - Energy Track
EE/E - Electrical/Electronic Engineering - Energy Track
ME/E - Mechanical Engineering - Energy Track
CE/E - Civil Engineering - Energy AGO for Facilities Management with Energy focus

Policy or Engineering (W or E)	uname	code	title	sec	BSO	title	mt	r_dmg	r_grade	Present SSC	Proposed SSC
E (ME/E)	OPNAV	00011	00011A1	A1140	11	PLP DIR/H431K SHIP SUPPORT PROG	AD	1440	H		S403H
E (ME/E)	PEO SHIPS WASH	36279	3422354	453310	24	PMS 500 HMMLE INTEGRATION OFFICER	AD	1440	H	5600P	S603P
E (EE/E)	PEO SHIPS WASH	36279	0097614	20400	14	ENGCOORD - DDG CLASS CHIEF ENG	AD	1440	I	1400P	S603P
E (ME/E)	NSSC OP SUPPEDIAS	42193	0080025	50640	24	NAVEENG SHPDGSM	AD	1440	I	1400N	S603P
E (ME/E)	NAV/SURFWARCEMOM D VA NWCF	06178	0010489	11200	24	LIAISON R&D/INTPROG OFF SPEC TECH CM	AD	1110	I		S603H
E (ME/E)	PEO SHIPS WASH	36279	3421253	006160	24	MAJ DPJ FS/SPECIAL PROJECTS OFFICER	AD	1110	H	5000H	S603H
E (ME/E)	PEO LCS	52210	0060253	48910	24	PLP DIR CMDSTY/ TECHNICAL DIRECTOR	AD	1110	G		S603H

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APPENDIX D. FINANCIAL MANAGEMENT BILLETS

Energy Post Graduate Education
Proposed Billets for Energy Sub Specialty Coding

Degree/Energy Track

FM/E - Financial Management - Energy Track
OA/E - Operations Research and Analysis - Energy Track
EE/E - Electrical/Electronic Engineering - Energy Track
ME/E - Mechanical Engineering - Energy Track
CE/E - Civil Engineering - Energy AQD for Facilities Management with Energy focus

Policy or Engineering (P or E)	aname	aulc	bin	boc	BSO	title	mrc	r_desig	r_grade	Present SSC	Proposed SSC
P (FM/E)	OPNAV	00011	0001133	43218	11	AVIATOR/N432D FLY HRS PROGRAM	AD	1300	H		3113H
P (FM/E)	OPNAV	00011	1869459	43500	11	SUP PLN/SPEC ASST TASK FORCE ENERGY/N43E	AD	3100	G		3113H
P (FM/E)	OPNAV	00011	0000271	40150	11	LIAISON R&D/N402B LOG TECH	AD	3100	I		3113H
P (FM/E)	OPNAV	00038	0003427	11015	33	LOGISTICS/SPECIAL ASSIST FOR OPER LOGS	AD	3100	G		3113H
P (FM/E)	COMUSC WASHINGTON DC WCF	00060	0004127	41214	60	SUP LOG/LOGISTICS/PLN OFF (N412)	AD	3100	I		3113H
P (FM/E)	COM US FLEET FORCES COMMAND	57025	0111738	40060	70	TRA PLN AVILOGT/AIKOPS/FHP	AD	1320	I		3113H
P (FM/E)	COMNAVAIRPAC	00074	1521536	85205	88	PRCM MGMT/SURFACE MOBILITY PROG MGR	AD	1110	I		3113H

Enclosure (1)

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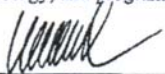
APPENDIX E. OPERATIONS ANALYSIS EDUCATIONAL SKILLS REQUIREMENTS


EDUCATIONAL SKILL REQUIREMENTS (ESRs) Operations Analysis – Energy (OA-E) Subspecialty 3213 Curriculum 358

1. Curriculum Number: 358
2. Curriculum taught at NPS, or Civilian Institution: NPS
3. Students are Fully Funded or Partially Funded: Fully
4. Curriculum Length in Months: 21 months
5. APC Required: 325
6. Operations Analysis Core ESRs
 - a. Basics: The graduate will possess the mathematical and computer programming skills required to support graduate study in operations research and have the ability to use computers as a tool to aid in analysis.
 - b. Probability, Statistics, and Data Analysis: The graduate will be well-versed in the fundamentals of probability, statistics and data analysis for application to modeling, simulation, and analysis of military decision problems.
 - c. Optimization: The graduate will be able to formulate and solve a wide variety of optimization problems and also be conversant with the major uses of such models in DoD and the private sector.
 - d. Stochastic Modeling: The graduate will be able to formulate and solve problems involving stochastic processes (processes with uncertainty over time) and also be familiar with the major applications of such models.
 - e. Simulation: The graduate will be able to construct and utilize simulations of combat and other processes that evolve in time, and will be able to deal with statistical issues associated with the need for replication.
 - f. Analysis of Military Operations: The graduate will be familiar with U.S./allied and potential enemy capabilities, doctrine, tactical and logistical support concepts. The graduate will be able to model and analyze military operations using operations analysis techniques, and be able to develop new tactical concepts based on theory and exercise reconstruction and analysis.
 - g. Systems Analysis: The graduate will understand the basic principles of systems analysis as a basis for making key decisions on force requirements, weapon systems, and other defense problems.
 - h. Practice: The graduate will have gained experience working on all aspects of an analytical study, and will demonstrate the ability to conduct independent analytical studies and proficiency in presenting the results both orally and in writing.
7. Energy ESRs
 - a. The graduate will have the ability to apply Energy principles as well as knowledge from Operations Analysis to the development and implementation of cost-effective energy technology development and acquisition programs throughout DON and DOD.

ENCLOSURE (4)

- b. The graduate will be able to analyze the strengths and weaknesses as well as cost and logistics implications of new energy technical proposals and suggest alternatives which recognize the potential impact on DOD/DON programs and objectives.
- c. The graduate will understand and be able to apply a range of Operations Analysis techniques (e.g. risk assessment and impact analysis) to RDT&E programs for platforms, systems and equipment that produce or consume energy.
- d. The graduate will have the ability to use and understand Energy systems in operations and logistics problem solving and cost analysis efforts specifically as they relate to existing and proposed DON/DOD Energy programs.
- e. The officer will be capable of understanding and evaluating the utility of Energy systems, technology, and programs currently employed by DON/DOD.

APPROVED:  27 SEP 12
 Subject Matter Expert (Date)
 Director, Energy and Environmental
 Readiness Division (OPNAV N45)

APPROVED:  26 OCT 12
 Major Area Sponsor (Date)
 Deputy Chief of Naval Operations,
 (Integration of Capabilities and
 Resources) (OPNAV N8)

APPROVED:  15 NOV 12
 President, Naval Postgraduate School (Date)

APPROVED: _____
 Director, Total Force Training and (Date)
 Education (OPNAV N15)

APPENDIX F. ELECTRICAL ENGINEERING EDUCATIONAL SKILLS REQUIREMENTS

2011-2013 EDUCATIONAL SKILLS REQUIREMENTS ELECTRICAL SYSTEMS AND ENGINEERING-Energy Track

Subspecialty Code: 5311

NPS Curriculum Number: 593

1. Curriculum Number: 593
2. Curriculum taught at NPS
3. Students are Fully Funded
4. Curriculum Length in Months: 24 Resident Only Program
5. Months the program starts: Jan, Mar, Jun, Sep
6. APC Required: 323
7. Community Managers have agreed to allow billets to be coded for 593 and Officers to be educated for this curriculum.

<u>Designator</u>	<u>Officer Community Manager</u>
a. 1110	Surface
b. 1440	Engineering Duty
c. 1300	Aviation
d. 1500	Aviation Engineering Duty

8. The Officer must understand the fundamental concepts and be familiar with the basic functional areas of Electrical Engineering within the Department of the Navy and the Department of Defense including:

a. **Mathematics:** The officer will have a thorough knowledge of mathematical tools, which are intrinsic to electrical and computer systems engineering, including but not limited to differential equations, vector analysis, linear algebra, probability, and Fourier and Laplace methods.

Enclosure (3)

b. **Engineering Science and Design:** To acquire the requisite background needed to meet the other military education requirements, the officer will acquire proficiency in modern physics, electromagnetic, electronic devices and circuits, system theory, modern electronic system design, and integrated electrical power systems and their controls. In addition, proficiency will be gained in other appropriate fields, such as underwater acoustics, dynamics, fluid mechanics, thermodynamics, or energy science and technology including the basics of energy, alternative energy generation and utilization, and energy conversion and storage¹ that provide the requisite breadth to a military engineering education.

c. **Cyber Networks and Physical Infrastructures:** The officer will have a sound understanding of cyber infrastructure systems and technologies of interest to the military. Knowledge will include but not be limited to cover copper and fiber media networks, telecommunication networks and signaling, the Internet and enterprise networks, wireless and cellular networks, and spaced based networks. Additionally, officers will gain an understanding of control and overlay networks such as Supervisory Control and Data Acquisition (SCADA) systems and the National power grid. In addition, the officer will have introductory knowledge of computer hardware and their integration into military systems.

d. **Electronic and Electrical Engineering:** In order to provide officers skilled in the application of electronic systems to military needs, the officer will have competence in the broad area of electrical engineering including circuits, electronics, computer and communications networks, and systems engineering. To achieve depth and breadth of understanding, the officer shall specialize in a minimum of two from the following areas: (a) Communication Systems (including electronic counter-counter measures, low probability of intercept systems, low probability of detection systems, and other military issues) (b) Guidance, Navigation, and Control Systems (c) Microelectronics (d) Power and Energy Systems which include the basics of energy, alternative energy generation and utilization, and energy conversion and storage (e) Signal Processing Systems (as applied to surveillance, underwater acoustic data acquisition and processing, imaging and target location, and other military

¹ Highlighted sections present in this document represent proposed modifications to the currently 2011 approved set of ESRs for this sub-specialty code to accommodate proposed energy emphasis.

Enclosure (3)

issues) (f) Computer Systems (including advanced integrated circuits, networking and data communications, parallel and distributed systems, reliable real time military platforms) (g) Sensors (including radar, electro-optical, electronic and information warfare systems) (h) Network Engineering (including wireless networks, sensor networks, high speed data networking, and telecommunication systems) (i) Cyber Systems (including a rigorous treatment of the cyber network and physical infrastructure, cyber system vulnerabilities and risk assessment, telecommunications systems engineering, trustworthy hardware, and Internet engineering)

e. System Engineering: The officer will have a sound understanding of engineering principles utilized in the systems engineering process, particularly as they relate to military systems, including establishment of system related operational requirements and criteria.

f. Conducting and Reporting Independent Investigation: The officer will demonstrate the ability to conduct independent investigation of a Navy and/or DoD relevant electronic systems problem, to resolve the problem, and to present the results of the analysis in both written and oral form.

Enclosure (3)

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APPENDIX G. MECHANICAL ENGINEERING EDUCATIONAL SKILLS REQUIREMENTS

2012-2014 EDUCATIONAL SKILLS REQUIREMENTS NAVAL/MECHANICAL ENGINEERING 5601P, 5602P, 5603P

570

1. Curriculum Number: 570
2. Curriculum taught at NPS
3. Students are Fully Funded
4. Curriculum Length in Months: 24
5. Months the program starts: January, June
6. APC Required: 323
7. Community Managers have agreed to allow billets to be coded for Naval Mechanical Engineering 570 and Officers to be educated for this curriculum.

<u>Designator</u>	<u>Officer Community Manager</u>
a. 1110	Surface
b. 1120	Submarine
c. 1440	Engineering Duty
d. 1300	Aviation
e. 1500	Aviation Engineering Duty

8. The Officer must understand the fundamental concepts and be familiar with the basic functional areas of Mechanical Engineering within the Department of the Navy and the Department of Defense including:

a. **THERMODYNAMICS AND HEAT TRANSFER:** Fundamentals of thermodynamics and heat transfer with applications to all marine engineering power cycles as well as propulsion and auxiliary system cycle analysis and design.

<u>Required Course #</u>	<u>Description</u>	<u>Alternate Course</u>
ME2101	Thermodynamics (4-1)	Undergraduate
ME3150	Heat Transfer (4-1)	NU3159
ME3240	Marine Power and Propulsion (4-2)	

Enclosure (4)

b. **FLUID MECHANICS:** Compressible and incompressible flow, both viscous and inviscid, with emphasis on propellers, cavitation, and design of shipboard fluid systems (e.g., fluid machinery, pumps, turbo machinery).

Required Course #	Description	Alternate Course
ME2101	Introduction to Fluid Dynamics (3-2)	Undergraduate
ME3201	Intermediate Fluid Dynamics (3-2)	

c. **DYNAMICS, CONTROL, NAVIGATION, AND AUTONOMOUS SYSTEMS:** Kinematics and dynamics of particle, rigid-body and multi-body mechanical systems. Modeling and simulation of engineering systems with mechanical, electrical and hydraulic components. Feedback control concepts, both frequency response and time domain, with applications to the design of component, platform, and weapon systems. Control of systems with continuous, discrete and combined logic states. Navigation and control for single and network-centric systems. Design of intelligent systems for machinery monitoring and automation, as well as autonomous vehicle operations.

Required Course #	Description	Alternate Course
ME2502	Dynamics (4-1)	Undergraduate
ME2801	Introduction to Engineering System Dynamics (3-2)	EC2300
ME3801	Linear Automatic Controls (3-2)	

d. **STRUCTURAL MECHANICS AND VIBRATION:** Statically determinant and indeterminate structural analysis, stress/strain analysis, buckling and fatigue. Shock and vibration response of marine structures, including surface ships and submarines.

Required Course #	Description	Alternate Course
ME2501	Statics (3-0)	Undergraduate
ME2601	Solid Mechanics I (3-2)	Undergraduate
ME3521	Mechanical Vibrations (3-2)	
ME3611	Solid Mechanics II (4-1)	

Enclosure (4)

e. **MATERIALS AND FABRICATION:** Metallurgical processes and transformations; analytical approach to failure of materials in Naval Engineering use and a basic understanding of the materials technology associated with welding or marine corrosion; an introduction to the developing fields of composites and superconducting materials.

Required Course #	Description	Alternate Course
MS2201	Engineering Materials (3-2)	Undergraduate
MS3202	Failure Analysis and Prevention (3-2)	
MS3304	Corrosion and Marine Environment Degradation (3-2)	MS3606

f. **COMPUTERS:** A basic understanding of computer system architecture, operating systems, networking and introduction to engineering software design. Practical experience of structured programming languages and the use of integrated design tools for computational and symbolic manipulation. Use and application of mainframe, workstation and personal computers for the solution of Naval engineering design and analysis tasks. Exposure to finite element and finite difference tools and techniques, with application to the thermo-fluid and structural mechanics/dynamics areas, including experience with representative software packages.

Required Course #	Description	Alternate Course
EC1010	Matlab (1-1)	
ME3450	Computational Methods in Mechanical Engineering (3-2)	
MA3232	Numerical Methods for PDE (3-2)	

g. **MATHEMATICS:** A basic understanding of statistics, multi-variable and vector calculus, matrix and linear algebra, differential equations, partial differential equations, and numerical methods and their applications in mechanical engineering fields of study.

Required Course #	Description	Alternate Course
MA1115	Multi-variable Calculus (4-0)	Undergraduate

Enclosure (4)

Required Course #	Description	Alternate Course
TS3001	Fundamental Principles in Naval Architecture (3-2)	Undergraduate

k. **SPECIALIZATION:** Each officer will also acquire technical competence in one or more of the following areas: THERMAL/FLUID SCIENCES, SOLID AND STRUCTURAL MECHANICS, DYNAMICS AND CONTROLS, MATERIAL SCIENCE, TOTAL SHIP SYSTEMS ENGINEERING, ENERGY SPECIALIZATION through additional graduate level courses and their associated prerequisites.

Required Course #	Description	Alternate Course
ME4XXX	Specialization Elective	
ME4XXX	Specialization Elective	
ME4XXX	Specialization Elective	

For energy specialization the following classes will be taken in addition to agreed upon Material Science or Thermal/Fluids specialization courses selected for Thesis work in the area of Energy:

Required Course #	Description	Alternate Course
OS3007	Operations Research for Energy Systems Analysis	
PH3998	Fundamentals of Energy	

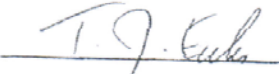
1. **JOINT AND MARITIME STRATEGIC PLANNING:** American and world military history and joint and maritime planning including the origins and evolution of national and allied strategy; current American and allied military strategies which address the entire spectrum of conflict; the U.S. maritime component of national military strategy; the organizational structure of the U.S. defense establishment; the role of the commanders of unified and specified commands in strategic planning, the process of strategic planning; joint and service doctrine, and the roles and missions of each in meeting national strategy.

Required Course #	Description	Alternate Course
NW323D	Strategy and Policy: The American Experience (4-2)	


m. **THESIS:** The graduate will demonstrate the ability to conduct independent analysis, in the area of Naval/Mechanical Engineering and proficiency in presenting the results in writing and orally by means of a thesis and command-oriented briefing appropriate to this curriculum.

Required Course #	Description	Alternate Course
ME0810	Thesis Research (0-8)	
ME0810	Thesis Research (0-8)	
ME0810	Thesis Research (0-8)	
ME0810	Thesis Research (0-8)	

Approved:


 RADM Thomas J. Eccles,
 Chief Engineer, Naval Sea Systems Command

8/28/2012
 Date


 Daniel T. Oliver
 President, Naval Postgraduate School

10/26/12
 Date

 Director, Total Force Programming
 and Manpower Management
 OPNAV N15

 Date

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APPENDIX H. FINANCIAL MANAGEMENT EDUCATIONAL SKILLS REQUIREMENTS

CURRENT EDUCATIONAL SKILL REQUIREMENTS Financial Management - Energy Focus Subspecialty 3113 Curriculum 838

EDUCATIONAL SKILL REQUIREMENTS FOR: Financial Management - Energy Focus/3113

1. Curriculum Number: 838
2. Curriculum taught at NPS.
3. Students are Fully-Funded or Partially-Funded: FULLY
4. Curriculum Length in months: 18 months
5. APC Required: 345
6. **Management Fundamentals** - The graduate will have the ability to apply quantitative techniques, accounting, economics, finance, organization theory, information technology, and other state-of-the-art management techniques and concepts to military management problems. Also the graduate will know basic management theory and practice, embracing leadership, ethics, written and oral communication, organization design, team building, human resource management, conflict resolution, quality assurance, cost-benefit analysis, risk analysis, stakeholder analysis, and planning within military organizations, as well as military sub-units and activities. This ensures internal and external constituencies are considered in resource management.
7. **Strategic Vision and Defense Budgeting** - The graduate will understand the roles the executive and legislative branches in strategic planning, setting federal fiscal policy, allocating resources to national defense, budget formulation, budget negotiation, budget justification, and budget execution strategies, including the principles of Federal Appropriations Law. In addition, the graduate will have knowledge of all aspects of the federal, Defense, and Navy budget cycles including the Planning, Programming, Budgeting, and Execution System with emphasis on budget formulation and execution.

Encl (4)

8. **Funds Management** - In support of approved programs, the graduate will be able to manage appropriated, revolving, and non-appropriated funds in compliance with regulations of the Comptroller of the Navy and the federal government. Also, the graduate will be able to develop and review financial reports, analyze budget execution against operating and financial plans, develop alternate plans based on analyses of an activity's financial performance, and prepare recommendations or make decisions regarding the reallocation or reprogramming of funds. The guidelines of the Defense Finance and Accounting System and the Federal Accounting Standards Advisory Board are relevant.

9. **Accountability, Control, and Auditing** - The graduate will be able to acquire and analyze financial data and communicate the results to a diverse audience, including maintaining an integrated financial information system and appropriate internal controls to ensure timely, accurate, and consistent financial information. In accordance with the auditing standards of the U.S. Government Accountability Office, the Defense and Navy audit organizations, and the professional standards of the American Institute of Certified Public Accountants, the graduate will learn to apply audit techniques that enforce sound internal accounting, and administrative controls, safeguard defense assets and assure the completeness and integrity of financial reports.

10. **Acquisition and Program Management** - The graduate will understand the purpose and concepts, fundamentals and philosophies of the defense systems acquisition process, and the practical application of program management methods within this process. This includes systems acquisition management; the systems acquisition life cycle; user-producer acquisition management disciplines and activities; and program planning, organizing, staffing, directing, and controlling. This satisfies the Defense Acquisition University education equivalency requirements for defense acquisition professionals as specified in Congress' Defense Acquisition Workforce Improvement Act (DAWIA).

Encl (4)

11. **Economy, Efficiency, and Effectiveness** - The graduate will have the skills for solving complex and unstructured management problems in which alternatives must be identified, evaluated, and selected in accordance with economical procurement of resources, and effective accomplishment of overall Defense and Navy goals and objectives. This includes cost/benefit analysis, systems analysis, cost estimation, value engineering, business process reengineering, and application of relevant OMB and Defense regulations.

12. **Cost Management and Analysis** - The graduate will be able to design, implement, and evaluate different costing systems encountered within Defense and Navy organizations and activities, as well as those found in private sector organizations conducting business with the federal government. In addition to private sector cost management policies and practices, the graduate will understand the application of Defense unit costing guidelines to functional business areas, and the Office of Management and Budget's Cost Accounting Standards for major suppliers of goods and services to the federal government.

13. **Strategic Resources Management** - The graduate will have knowledge of strategic vision and strategic core competency concepts for setting long-range goals and objectives; designing programs to achieve objectives; assigning individual responsibility for resource management, actions, and decision making; measuring performance; reporting results; and evaluating and rewarding performance. This includes assessing customer needs and customer satisfaction, making recommendations, and implementing improvements in the effective delivery of goods and services to customers or users.

14. **Innovation and Creativity** - The graduate will demonstrate innovation and creativity in developing solutions to complex financial, budget, and program management issues that increase program effectiveness and customer satisfaction, while controlling the efficient utilization of financial, physical, and human resources. This involves the ability to identify problems and potential concerns, providing leadership, and teaming with others in the decision making process, and obtaining support for recommended decisions or courses of action.

Encl (4)

15. **Strategy and Policy** - Officers develop a graduate-level ability to think strategically, critically analyze past military campaigns, and apply historical lessons to future joint and combined operations, in order to discern the relationship between a nation's policies and goals and the ways military power may be used to achieve them. This is fulfilled by completing the first of the Naval War College series leading to Service Intermediate-level Professional Military Education (PME) and Phase I Joint PME credit.

16. **Energy Emphasis** - The graduate will understand the fundamental concepts and be familiar with the basic functional areas of energy within the Department of the Navy (DON) and the Department of Defense (DOD). The graduate will be able to employ costing for energy efficiency technologies and protocols; understand and compare energy generation systems and their cost/benefits; interpret risk and reward with regard to energy security and energy management; summarize energy consumption and logistics during warfare operations; demonstrate understanding of energy acquisition policy, strategy, and budgeting; and be knowledgeable of energy sources including alternatives to petroleum and their cost/benefits.

APPROVED:



MAJOR AREA SPONSOR

9/10/12

DATE

APPROVED:



PRESIDENT, NPS

10/2/12

DATE

APPROVED:

DIRECTOR, TFTE (OPNAV N15)

DATE

APPENDIX I. PRIMARY NOBCS ASSIGNED TO PROPOSED BILLETS REQUIRING ENERGY SUBSPECIALTY CODES

1476 PROCUREMENT MANAGEMENT OFFICER[PRCM MGT] [Job Code: 001036]

Manages one or more procurement functions at Departmental or other staff level. Establishes policies and procedures governing procurement and production of basic and processed materials, end products, components and services. Determines broad procurement objectives. Monitors contract administration, quality assurance and production surveillance. Evaluates contractor performance. Evaluates contractor business and financial operations, practices, policies and decisions to assess effects on contractor performance and costs to the Government. Directs all phases of the contracting process.

Related Codes: NOBC - 1480, 1485; DoD Group - 8D
Procurement and Production

1920 EQUIPMENT PROGRAM SUPPORT OFFICER [EQ PGM SUP] [Job Code: 001053]

Directs and administers program for material support of equipment operation and overhaul. Determines items required for support of operations. Develops requisite inputs for the preparation of allowance lists, and maintains allowance lists in current status. Manages and directs acquisition, distribution, redistribution, overhaul and disposal of material. Prepares item identification. Determines interchangeability and the appropriate material manager in the Navy supply system. Prepares budget estimates.

Related Codes: NOBC - 1918, 1978, 1990; DoD Group - 8B
Supply

1978 SUPPLY LOGISTICS OFFICER [SUP LOG] [Job Code: 001073]

Plans or directs supply, storage and issue of materials in direct support of operations. Develops plans and procedures to meet supply requirements in coordination with operational plans. Collects data, evaluates and establishes items of stock. Develops programs for supply facilities such as utilization of storage space. Coordinates efforts of regular supply activities in support of logistic plans. Conducts logistics research. Maintains statistical and other data. Develops and distributes publications.

Related Codes: NOBC - 1272, 1940, 1984; DoD Group - 8A
Logistics, General

1984 SUPPLY PLANS OFFICER [SUP PLN] [Job Code: 001075]

Plans and advises command on supply activity programs. Administers management programs and provides for supply support of operational plans. Studies supply problems and recommends corrective programs and policies. Coordinates policies and procedures through contacts with other activities and services. Participates in planning studies. Administers and coordinates mobilization and readiness planning and plans. Formulates and administers internal activity budget. Establishes management analysis and control systems required for evaluating and reporting progress toward objectives.

Related Codes: NOBC - 1295, 1476, 1918, 1978; DoD Group - 8B Supply

2166 DESIGNATED PROJECT ENGINEERING COORDINATOR [DPJ ENGCOOR] [Job Code: 001130]

(For use on billets, see NOTE) Assists the manager of a designated project in the major functional area of engineering. Provides development and production engineering support to maintain high quality analysis and revision of engineering procedures being used for production of the new weapons system. Reviews feedback from the Test and Evaluation Coordinator for rapid integration of necessary engineering changes into the production run model.

Related Codes: NOBC - 2167, 2170; DoD Group - 1B Executives, N.E.C.

NOTE -Restriction on use: In the identification of billets, this NOBC shall be applied only to billets in which the incumbent reports directly, or through the principal deputy, to the designated project manager.

2170 DESIGNATED PROJECT SUPPORT OFFICER [DPJ SUP] [Job Code: 001138]

(For use on billets, see NOTE) Performs duties in direct support of a designated project manager. Performs duties in the engineering, logistics, procurement, test and evaluation, or financial management phases of the project.

Related Codes: NOBC - 1480; DoD Group - 7A Administrators, General

NOTE -Restriction on use: In the identification of billets, this NOBC shall identify billets in the immediate office of a designated project manager in which the incumbent reports to the project manager through two or more levels of

officer or civilian supervision. Also, it may identify billets in appropriate systems command field activities and laboratories wherein the incumbent provides services directly related to the development, production, test, or material support of a weapon system acquisition project managed by a designated project manager.

2190 LIAISON OFFICER, NAVAL RESEARCH AND DEVELOPMENT
[LIAISON R&D] [Job Code: 001153]

Maintains liaison between the Department of the Navy and other government and private scientific activities. Maintains staff cognizance of scientific work, planning objectives and operational requirements of Navy's research and development program. Recommends adoption of plans or changes thereto, correlating research program with needs of Navy. Advises director and staff personnel on status of research projects. Studies results of research, suggesting additional naval applications. Serves in conjunction with civilian scientists on scientific and technical boards.

Related Codes: NOBC - 2105, 2175; DoD Group - 5L R&D Coordinators

3217 TRAINING PLANNING AND PROGRAM OFFICER (AVIATION, FLIGHT) [TRA PLN AVFLGT] [Job Code: 001318]

(For definition, see NOBC 3215)

Related Codes: NOBC - 3215, 8592, 8593; DoD Group - 7B Training Administrators

3215 EDUCATION/TRAINING PLANNING AND PROGRAM OFFICER (GENERAL) [ED TRA PLN GEN] [Job Code: 001315]

Reviews naval plans and policies and prepares training and continuing education programs to meet requirements. Directs development of training curriculum, standards, methods, and educational materials. Formulates instructional procedures and maintains documentation. Prepares training program budget estimates and controls allocation of funds. Establishes standards for selection of students. Establishes school quotas. Coordinates programs with other facilities and agencies. Directs operation of educational or correspondence course center.

Related Codes: NOBC - 3217, 3219, 3290; DoD Group - 7B Training Administrators

6962 WEAPONS PLANNING AND PROGRESS OFFICER[WEP PLN&PROG]
[Job Code: 001630]

Formulates basic plans for Naval Sea Systems Command or related shore activities and reviews progress in

implementation thereof. Interprets broad naval weapons operational and material plans in order to develop systems command or activity planning programs. Advises divisions and activities of indicated plan requirements, ensuring revisions to conform to changing overall plans. Analyzes periodic reports from divisions and activities to ascertain progress and to ensure coordination of program. Prepares special studies and reports as required.

Related Codes: NOBC - 6715, 6942, 6980; DoD Group - 4E Ordnance

7120 NAVAL ENGINEERING HULL DEVELOPMENT OFFICER[NAVENG HULLDEV] [Job Code: 001656]

Directs or participates in research, design, development and test of hulls, hull structures and appurtenances. Initiates and supervises research and preliminary design work. Evaluates adequacy of damage control design features and recommends improvements. Designs hull stowage and living spaces, ship furniture, and messing and berthing equipment. Applies knowledge of hydromechanics to development of design criteria and power requirements for all naval vessels. Recommends military characteristics for new ships. Oversees major hull alterations and conversions.

Related Codes: NOBC - 7165, 7974; DoD Group - 4G Ship Construction and Maintenance

7974 NAVAL ENGINEERING OFFICER, SHIP DESIGN [NAVENG SHPDSGN] [Job Code: 001735]

Directs or supervises ship design activities. Organizes and coordinates design work, including value engineering studies. Serves as consultant on hull, machinery, electrical and electronic design problems for ships under construction, overhaul, conversion, inactivation, and for special design projects. Directs stability and strength tests. Supervises ship design improvement projects and approves designs on basis of adequacy and accuracy.

Related Codes: NOBC - 7120; DoD Group - 4G Ship Construction and Maintenance

8501 AVIATOR [AVIATOR] [Job Code: 001842]

Pilots or Naval Flight Officers responsible for the safe operation of naval aircraft with regards to command, piloting navigation, communications, or weapons system operation management in support of various missions of the Navy.

Related Codes: NOBC - 8506, 8583, 8585, 8588, 8591, 8592, 8593, 8594; DoD Group - 2B Other FixedWing Pilots

9038 STAFF SPECIAL PROJECTS OPERATIONS OFFICER [STF SP PJ OPS] [Job Code: 001974]

Coordinates plans, policies and studies for sea phases of research and development projects. Directs and administers overall shipboard operations such as cable laying, navigation and salvage. Coordinates underwater sound detection projects. Informs staff concerning status of projects and allied research. Requisitions special equipment and ensures proper operating conditions. Maintains liaison with Navy Units, systems commands and other services and civilian contractors.

Related Codes: NOBC - 2180, 2190, 9059; DoD Group - 2G Operations Staff

9051 LOGISTICS OFFICER [LOGISTICS] [Job Code: 001990]

Directs or assists in the direction of activities concerned with the preparation, review and implementation of logistic plans. Plans for support of seagoing forces and naval bases. Establishes policies governing implementation of plans, providing general guidance for material control and for base and fleet maintenance. Coordinates efforts to fulfill established requirements. Determines priorities and controls allocation of critical items. Reviews and evaluates progress in fulfilling requirements.

Related Codes: NOBC - 1272, 1940, 1978, 5965, 6942, 7931; DoD Group - 8A Logistics, General

9067 STAFF READINESS OFFICER (GENERAL) [STF REDI GEN] [Job Code: 002013]

Administers program designed to maintain and improve combat readiness of ships of command. Determines efficiency rating of ships by planning, organizing, conducting, or evaluating competitions and exercises and assigns annual and special marks. Establishes test programs for equipment and/or ordnance systems. Recommends modification or development of new tactics and doctrine.

Related Codes: NOBC - 8950, 9065, 9068-9078; DoD Group - 2G Operations Staff

9085 OPERATIONS ANALYST [OPS ANAL] [Job Code: 002050]

Conducts theoretical, statistical and simulator analyses of complex systems. Assists in determining basis for decisions regarding selection, employment and control of operations

systems. Interprets results of fundamental operations research studies. Assists in design of fleet and operational evaluations of new equipment, weapons systems and tactics and in interpretation of results of evaluations. Assists in design, analysis and interpretation of results of fleet exercises.

Related Codes: NOBC - 2085, 2180, 8972, 9065, 9073, 9086;
DoD Group - 2G Operations Staff

9086 STRATEGIC PLANS OFFICER [STRAT PLN] [Job Code: 002052]

Prepares naval strategic plans, policies and studies. Develops strategic plans and policies for overall naval operations and for specific geographical areas in accordance with established joint strategic plans. Reviews operation plans for adequacy and relationship to strategic concepts. Provides guidance to Naval War College and naval members of other service college staffs concerning naval plans, policies and developments. Serves on joint strategic plans committee. Maintains liaison with joint service agencies and Government departments.

Related Codes: NOBC - 3265, 9073, 9087; **DoD Group - 2G Operations Staff**

9087 STAFF PLANS OFFICER [STF PLN] [Job Code: 002054]

Assists commander by coordinating formulation and preparation of plans, policies and studies. Coordinates and directs staff preparation of all emergency, mobilization, logistic and war plans. Analyzes and evaluates such plans of higher authorities, commenting on their effects upon command and preparing supporting plans as required. Reviews, evaluates, coordinates and directs such planning of subordinate commands. As required, represents commander in collaboration with other services and Government agencies in developing plans. Maintains liaison with other commands and Government agencies.

Related Codes: NOBC - 9065, 9067, 9086; **DoD Group - 2G Operations Staff**

9942 INTERNATIONAL AFFAIRS OFFICER [INTNL AFF] [Job Code: 002464]

Advises and assists in planning and implementing policy with respect to politico-military aspects of international affairs. Provides background information on international developments of interest to the Navy, interpreting and evaluating their politico-military significance. Advises, assists and supports the development of plans and policies.

Provides information, guidance, assistance and representation on international matters of interest to the Navy. Maintains liaison with government agencies concerned with international affairs.

Related Codes: NOBC - 2529, 9940; DoD Group - 5D Social Scientists

9980 PLANS AND POLICIES DIRECTOR [P&P DIR] [Job Code: 002476]

Exercises policy direction and control over particular phases of general mission such as air, surface, or undersea warfare, fleet readiness and atomic energy; or immediately assists as assistant director or special assistant in such direction and control.

Related Codes: NOBC - 9009, 9421, 9970; DoD Group - 1B Executives, N.E.C.

9981 NAVAL PLANS AND POLICIES DIRECTOR, NAVAL COMMAND SYSTEMS [P&P DIR CMDSYS] [Job Code: 002480]

Exercises policy direction and control over all matters pertaining to naval command and control systems, combat direction and electronic warfare, including operational readiness, operational training, tactical doctrine and operational requirements.

Related Codes: NOBC - 9970, 9980; DoD Group - 1B Executives, N.E.C.

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**APENDIX J. EXAMPLE REQUEST FOR ESTABLISHMENT OF
NAVY OFFICER BILLET CLASSIFICATION CODE**

From: Director, Energy and Environmental Readiness Division
(OPNAV N45)

To: Commanding Officer, Navy Manpower and Analysis Center

Subj: REQUEST THE ESTABLISHMENT OF NEW NAVY OFFICER BILLET
CLASSIFICATION CODE 99XX - ENERGY ANALYST

Ref: NAVPERS 15398I

1. In accordance with NAVPERS 15398I, request the
establishment of Navy Officer Billet Classification Code
99XX, Energy Analyst.

2. Recommended definition, long and short titles:

99XX ENERGY ANALYST [ENR ANAL]
Directs or assists in the analysis and direction of activities concerned with the acquisition, development, and implementation of cost-effective energy technologies and programs. Preform risk assessment and impact analysis of energy systems, utilized and proposed.

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